EUPHORBIA SPECIES FROM THE FLORA ZAMBESIACA AREA: V

L. C. Leach

Euphorbia confinalis R. A. Dyer in Bothalia **6,** 1: 222 (1951).—Codd, Trees & Shrubs, Kruger Nat. Park: 98 (1951).—Jacobsen, Handb. Succ. P1. 1: 421 (1960).—Boughey, Check List Trees S. Rhodesia, in Journ. S. Afr. Bot. **30:** 162 (1964). Type: Transvaal, Pilgrims Rest Distr., *Codd & De Winter* 5580 (PRE).

Euphorbia cooperi sensu Hutchinson, Bot. S. Afr.: quoad fig. opp. 321 (1949).

The distribution of this species is much wider than was apparently at first thought and two subspecies may be recognised.

Subsp. **confinalis.**

Trunk initially 3—5 angled (most commonly 4), usually simple or occasionally with 1—2 trunk-like branches (seldom more than 2); ultimate branches 3—4 or rarely 5 angled; involucral bracts wider than long, shorter than the involucre.

Transvaal.—Zoutpansberg Distr., ±7 miles SW of Punda Maria, 6. ix.. 1947, *Codd* 3026 (PRE); 6·5 m. NW of Punda Maria, st. 25. vii. 1951, *Rowland-Jones* 53 (PRE); cult. Pafuri, fl. & fr. Aug.–Sept. 1964, *Mockford* in *Leach* 12529 (PRE; SRGH). Pilgrim's Rest Distr., 2 m. E of Gorge Camp, Kruger Nat. Park, fl. 20. v. 1949, *Codd & De Winter* 5580 (PRE); Satara Camp, Kruger Nat. Park, fr. 6. viii. 1950, *Swartz* comm. *Codd* s.n. (PRE; SRGH); Nwanetsi, Kruger Nat. Park, fl. 17. vi. 1952, *Van der Schijff* 510 (PRE). Letaba Distr., Letaba, Kruger Nat. Park, fl. 7. vi. 1954, *Van der Schijff* 3860 (PRE). Barberton Distr., ±25 m. SE of Hectorspruit, 21. iv. 1953, photo. *Codd* s.n. (PRE).

Moçambique.—Lourenço Marques Distr., Ressano Garcia, fl. 1936, *Van der Merwe* E17 (PRE), fl. July 1938, *Van der Merwe* 1698 (PRE); ± 6 m. W of Moamba, fl. 4. vi. 1947, *R. A. Dyer* 4799 (PRE; SRGH); ± 20 m. S of Ressano Garcia, fr. 29. vii. 1961, *Leach* 11211 (PRE; SRGH); ± 10 m. S of Boane, st. 14. x. 1963, *Leach & Bayliss* 11932 (G; K; LISC; PRE; SRGH); ± 10 m. N of Moamba, fl. 28. vi. 1964, *Leach* 12263 (COI; G; K; LISC; PRE; SRGH). Manica e Sofala Distr., Buzi Riv., near Gogoi, st. 23. xi. 1960, *Leach & Chase* 10532 (PRE; SRGH).

S. Rhodesia.—Chipinga Distr., Chibunje, fl. ♂ July 1964, *D. C. Plowes* 2442 (SRGH).

The distribution of the typical subspecies extends generally along the Lebombo range and its foothills, in both S. Africa and Moçambique (being particularly plentiful in the vicinity of Komatipoort and Ressano Garcia) but is, however, by no means confined to the rocky hills and ridges of this range; it occurs frequently also on the deep soils of the low altitude coastal plain of Moçambique. Numerous communities are to be found in the thick bush country to the south of Boane and there is a magnificent "stand", several acres in extent, near the Inkomati Riv., about 10 miles north of Moamba. Somewhat disjunct communities also occur at Chibunje, on deep alluvium, near the Sabi Riv. in the Chipinga Distr. of S. Rhodesia and along the Buzi Riv. not far from its source, near Espungabera in the Manica e Sofala Distr. of Moçambique; at this latter locality the trunks are fairly consistently initially 3-angled as also are the majority of the branches.

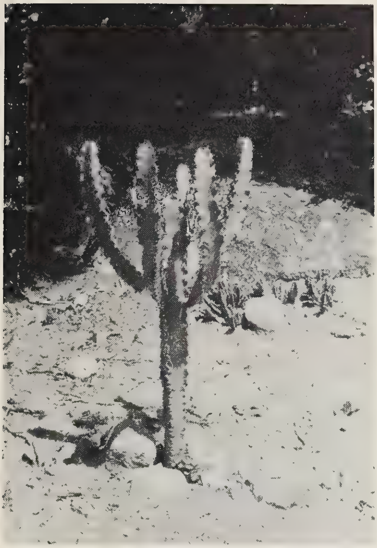
Subsp. **rhodesiaca** Leach, subsp. nov.

A subspecie typica trunco initio 5—6 angulato plerumque ramis trunciformibus paucis instructo, ramis ultimis spinosis 4—5 angulatis validius armatis, involucri bracteis saepe longioribus quam latioribus, plerumque quam involucrum paulo longioribus differt.

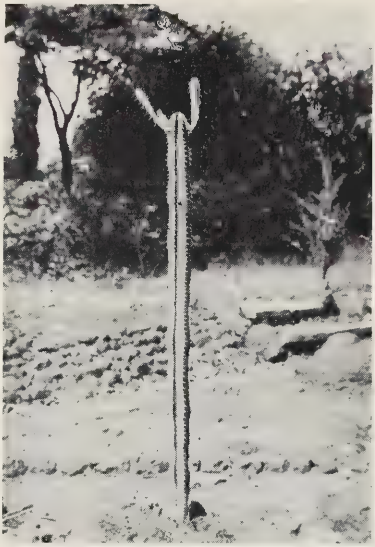
Type: S. Rhodesia, Chibi Distr., *Leach* 9346 (PRE holotype; SRGH).

S. Rhodesia.—Chibi Distr., ± 1 mile S of Chibi, fl. & fr. 26. viii. 1959, *Leach* 9346 (PRE; SRGH); photo. *Leach* 5041 (PRE). Bikita Distr., Moodies Pass, cult "Ewanrigg" st. Aug. 1942, *Vereker* in *Christian* 1125 (PRE); on granite slopes, fl. 27. viii. 1959, *Leach* 9324 (PRE; SRGH).

Plants of this subspecies have a rather stouter facies and differ from the typical in having an initially 5/6-angled trunk which usually has one or several trunk-like branches each with a crown of 4/5-angled branches which are generally more strongly armed than those of the typical subspecies; the spine shields are also usually hornier, wider and more distinct (degeneration of both spines and shields does occur, but not nearly as frequently as in the subsp. *confinalis*), while the larger involucral bracts are often longer than wide, usually partially exceeding the involucre. It is, however in the juveniles that the differences are most evident; those of the subsp. *confinalis* are relatively stout, 3—4 or rarely 5-angled with the sides only slightly, if at all, concave, pale or dull green in colour and almost or entirely without markings, branching usually commencing while the plants are no more than 30 cm. high. These characters contrast sharply with those of young plants of the subsp. *rhodesiaca* which are relatively slender, 5/6-angled with the sides usually deeply sulcate and conspicuously marbled or feather marked with dark green; branching seldom occurs until plants are 1 m. or more in height and even then only relatively sparingly and vestigially.



Juvenile typical of the subsp. *confinalis*. Ht. c. 30 cm.



Juvenile typical of the subsp. *rhodesiaca*. Ht. c. 1 m.

The Chibunje population is, to a slight extent, intermediate, the juveniles exhibiting compressed angles and dark green marbling in their coloration; however in all other respects, e.g. habit, count of angles and spinescence, these plants fall within the circumscription of the subsp. *confinalis*.

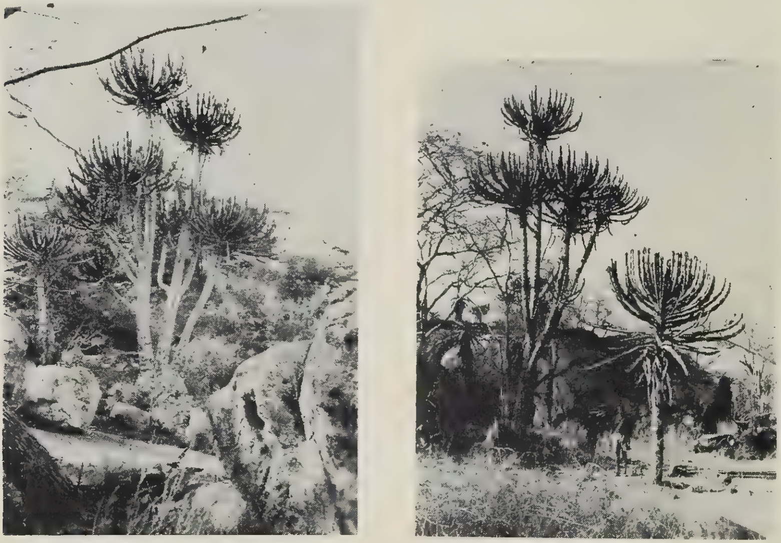
It is interesting to note that this taxon is recognised by the natives as being distinct from the other tree species present in the area; its name in the Chikaranga dialect (S. Rhodesia) being *urudu* whilst those of *E. ingens* Meyer and *E. cooperi* N. E. Br. are *ngonde* and *chikondekonde* respectively.

It is probable that *E. confinalis* is included in Sim's concept of *E. grandidens* in For. Fl. & For. Res. P.E.A.: 1105 (1909), which appears (as suggested by Sim) to include several taxa. The plants discussed by White, Dyer & Sloane under *E. triangularis* Desf. in The Succ. Euphorb., 2: 895 & fig. 1023 (1941) also belong here.

Throughout its distribution range the species is very variable in some of its floral characters and wide variations may be observed in the shape and size of the bracts, gland shape, degree of development of the perianth and even in the pattern of the hood above the ovule; it is, however, only in the involucral bracts that there appears to be any correlation with the subspecies, those of the subsp. *rhodesiaca* being the longer (usually slightly exceeding the glands).

The latex, whilst not having any acrid odour, is apparently extremely virulent; an African assistant once had to be taken back to Salisbury with a badly swollen face, due apparently to his having rubbed it with his hands after handling specimens. This is the most violent reaction observed by the author, bearing in mind the secondhand nature of the contact.

E. confinalis is a slow growing species; plants in cultivation at Greendale, S. Rhodesia, have gained only about 50—70 cm. in height in more than 10 years. The smallest plant yet seen to have reached the flowering stage was about 3·5 m. high and must therefore already have been quite an age.



Adult plants typical of the subsp. *rhodesiaca*. Near Chibi, S. Rhodesia.

Euphorbia ramulosa Leach, sp. nov.

E. schinzii Pax affinis sed ramis ramulosis rigidis, marginibus corneis continuis, cymis pedunculatis, ramis cymarum longioribus, floribus masculis numerosioribus, stylis brevioribus differt.

Frutex succulentus spinosus pulvinatus pumilus perrariter quam 15 cm. altior, ramosissimus, ramulis confertis rigidis. *Rami* et *ramuli* quadrangulares

tuberculato-dentati, in segmenta non constricti, rigidi erecti, versus apicem truncatum c. 1 cm. crassi; rami primi usque ad 17 cm. longi, versus basem subteretes ad 2 cm. crassi; tuberculorum dentes plus minusve deltati truncati vel subtruncati, usque ad 2·5 mm. alti, 8—12 mm. distantes. *Podaria* plus minusve lineari-obtriangularia confluentia cornea albo-grisea. *Spinae* binae divergentes apice tuberculi dispositae suberectae vel patulae, plerumque c. 5 mm. longae (ad 8 mm.). *Folia* minuta mox decidua; foliorum cicatrices inconspicuae spinulis binis minutis praeditae. *Inflorescentia* cymosa breviter pedunculata, ex axillis tuberculorum producta, cyathiis 3 horizontaliter dispositis; pedunculus bibracteatus, 1—3 mm. longus; bracteae late ovatae denticulatae c. 1 mm. longae; cyathium medium masculinum deciduum; cyathia lateralia bisexualia, ramis cymarum bibracteatis; bracteae plus minusve ovatae emarginatae irregulariter denticulatae c. 1·5 mm. longae. *Involucrum* glabrum latissime infundibuliforme 3·5—5·25 mm. diam., 1·75—2·75 mm. longum, lobis 5 transverse late ellipticis irregulariter breviter fimbriatis c. 1·5 mm. longis; glandulae 5 planae vel leviter concavae minute foveolatae, transverse anguste oblongae contiguae patulae 1·5—2·75 mm. latae. *Flores masculini* 25, 5-fasciculati, bracteolis fimbriis filiformibus c. 2·5 mm. longis; bracteae fasciculares late flabellatae breviter fimbriatae laciniatae; pedicelli c. 2·5 mm. longi. *Ovarium* in cyathio ab initio inclusum mox partim exsertum. *Styli* 1—1·2 mm. longi, libri fere ad basem, patuli reflexique, apicibus capitatis integris vel emarginatis rugulosis pellucidis. *Capsula* obtuse trilobata c. 3 mm. diam., 3·25 mm. longa, ex involucro partim exserta pedicello leviter sulcato c. 1·5 mm. longo. Semen ellipsoideum c. 1·75 mm. longum, 1·2 mm. diam. verrucosum griseo-brunneum, verruculis pallidis.

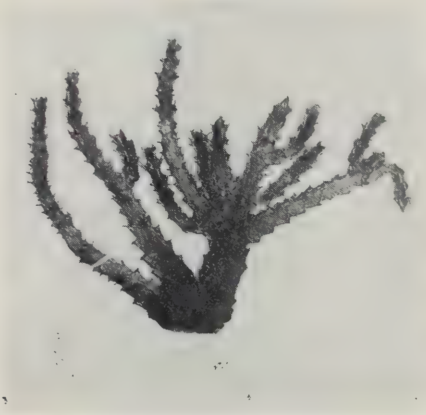
Type: *Leach & Schelpe* 11440 (K; LISC; PRE; SRGH, holotype).

Moçambique. Moçambique Distr.: ± 60 km. W of Nampula, approx. 15° 1′ S, 38° 50′ E, in crevices on steep granite slope, alt. c. 800 m., st. 23. v. 1961, *Leach & Rutherford-Smith* 10975 photo. (K; LISC; PRE; SRGH), cult. Greendale, S. Rhodesia, fl. & fr. 1963 *Leach & Schelpe* 11440 (K; LISC; PRE; SRGH).

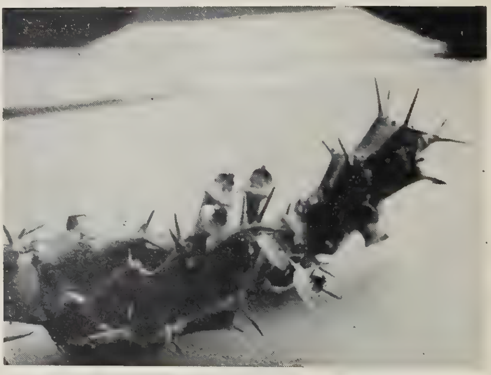
Euphorbia ramulosa is a member of the large group of shrubs and undershrubs characterised by 4-angled branches, sessile or subsessile capsules and verrucose seeds; its closest relationship seems to be with the widespread and extremely variable *E. schinzii* although there are also close ties with *E. tetracanthoides* Pax and it is thought that *E. ramulosa* may eventually prove to be more closely related to this latter species which is, unfortunately, not very well known.

The new species differs from *E. schinzii* in its continuous horny margins,

pedunculate cymes and long cyme branches, more numerous male flowers, and shorter styles, while the more ramulose branches are much more rigid than those of its relatives.



Portion of plant with branchlets.

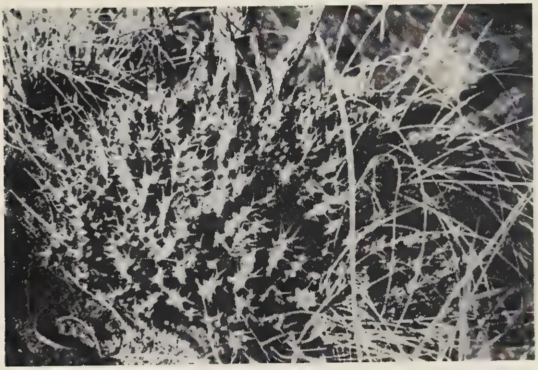


Flowering branchlet.

Fruiting branchlet.

The distribution of *E. ramulosa*, as presently known, is confined to one large, isolated, granite hill where plants are found growing wedged in crevices on the steep slopes, in association with another *Euphorbia* sp. aff. *E. graniticola* Leach, *Aloe mawii* Christian, *Selaginella njamnjamensis* Hieron, *Vellozia* spp. etc.

Typical habitat.

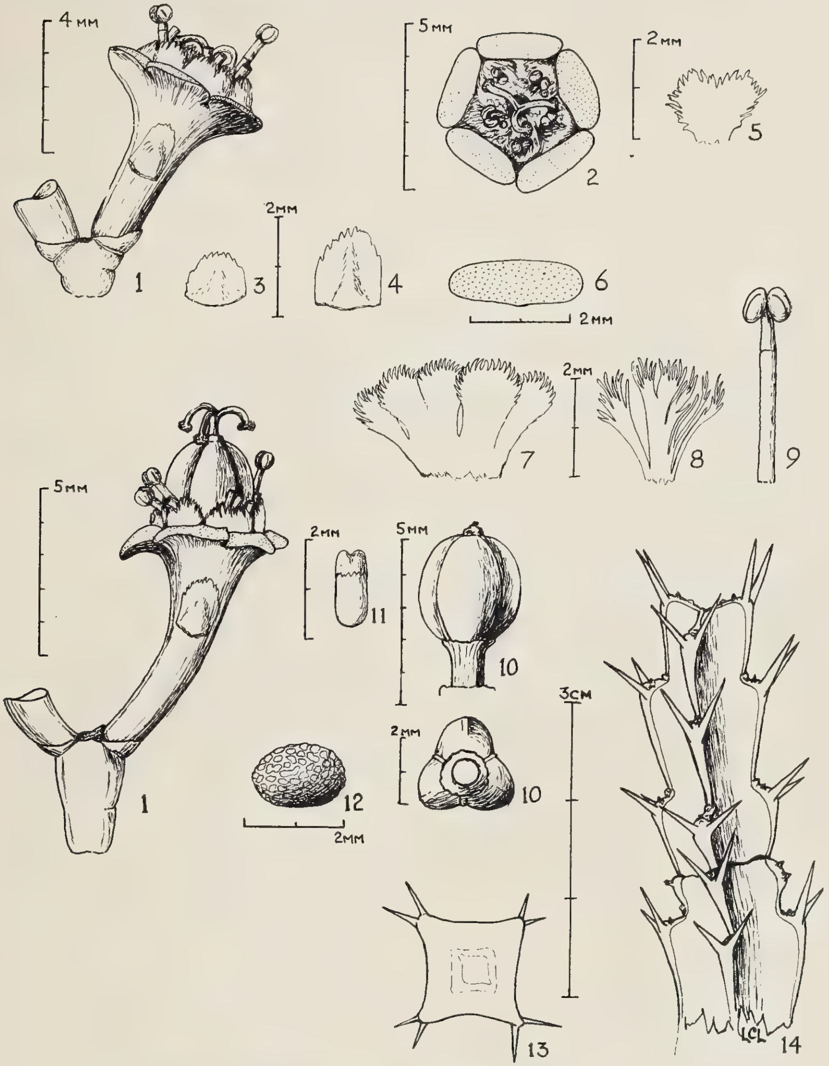


Plant at type locality.

The species has been found difficult to cultivate, possibly because it is virtually impossible to remove plants without causing extensive damage to the root system. The original gathering of live plants, made in 1961, died before flowering, but from those collected in the course of the expedition made in the following year, sufficient flowering and fruiting material was eventually obtained for this description to be completed.

Plant a spiny succulent ramulose pulvinate dwarf shrub, usually less than 15 cm. high. *Branches* and *branchlets* erect, rigid, crowded, quadrangular with the angles moderately compressed above and the sides only slightly concave below, tuberculate dentate, c. 1 cm. thick towards the truncate apices with the tubercle teeth more or less deltate, truncate or subtruncate, up to 2·5 mm. high, 8—12 mm. apart along the angles; main branches up to 17 cm. long with the subterete basal portion up to 2 cm. diam., tapering gradually towards the apex, not constricted into segments but the seasonal growth usually marked by curious fold-like divisions. *Spine shields* more or less linear—obtriangular, forming a continuous whitish horny margin, c. 1·5 mm. wide along the truncate upper slope of the tubercle teeth to just below the spine pairs, then narrowing to the flowering eye below. *Spines* relatively stout, up to 8 mm. long (generally about 5 mm.), in pairs at the apex of the tubercles, suberect to spreading, diverging but not very widely so (the included angle is usually c. 80°). *Leaves* minute (less than 1 mm. long) soon deciduous, leaving an inconspicuous scar flanked by a pair of minute prickles which are frequently obsolescent, then becoming little more than asperities. *Inflorescence* a shortly pedunculate cyme of 3 cyathia arranged in a plane at right–angles to the axis of the branch, produced from the axils of the tubercles c. 2·5 mm. behind the spine pairs; peduncle bibracteate, 1—3 mm. long; primary central cyathium male, deciduous; lateral bisexual cyathia usually held erect on curved bibracteate cyme branches, 1·75—4·5 mm. long; bracts ± ovate, c. 1·5 mm. long, emarginate, irregularly denticulate. *Involucre* glabrous, broadly funnel shaped, 3·5—5·25 mm. diam. 1·75—2·75 mm. long, with 5 transversely broadly elliptic, irregularly shortly fimbriate lobes c. 1·5 mm. long and 5 spreading, contiguous, transversely narrowly oblong glands 1·5—2·75 mm. in their greater diam., flat or slightly concave on the lightly pitted greenish yellow upper surface. *Male flowers* 25, produced successively; pedicels pink, c. 2·5 mm. long; filaments bright red; anther cells dark purplish red; bracteoles filiform fimbriate c. 2·5 mm. long; arranged in 5 fascicles each enclosed in a broad, flabellate, shortly fimbriate laciniate bract. *Pistillate flower* at first included in the involucre, very soon partially exserted; ovary 3-lobed trigonous; ovule attached beneath a denticulate fleshy hood. *Styles* 1—1·2 mm. long, free nearly to the base, purplish red, spreading recurved with entire or emarginate, capitate, rugulose translucent yellow apices. *Capsule* obtusely 3-lobed, partially exserted from the involucre, c. 3 mm. diam., 3·25 mm. high, blackish purple on the apex and down the angles and sutures, green below, borne on a lightly sulcate pedicel c. 1·5 mm. long, with a rudimentary perianth. *Seed* ellipsoid, somewhat flattened along the suture,

EUPHORBIA RAMULOSA



(1) Lateral bisexual cyathium.
(2) Involucre (in plan).
(3) Peduncular bract.
(4) Involucral bract.
(5) Involucral lobe.
(6) Involucral gland.
(7) Internal fascicular bract.
(8) Bracteole.
(9) Staminate flower.
(10) Capsule.
(11) Ovule with hood.
(12) Seed.
(13) Section through branch.
(14) Apical portion of branch.

c. 1·75 mm. long, 1·2 mm. diam., greyish brown, rather heavily verrucose with paler or somewhat whitish verrucae.

ACKNOWLEDGEMENTS

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